REMARKS

Claims 1-20 are pending in the application. In the Action, the Examiner did not find persuasive the arguments presented to traverse the Restriction Requirement. The Examiner refused to consider two (2) of the references submitted in connection with Information Disclosure Statements (IDS). The Examiner objected to the drawings as containing reference characters not contained in the description. The Examiner objected to the specification based on informalities. The Examiner rejected Claims 1-8 under 35 U.S.C. §112, first paragraph, as being non-enabling. The Examiner rejected Claims 1-8 under 35 U.S.C. §112, second paragraph, as being indefinite and/or incomplete. The Examiner rejected Claims 1-5 under 35 U.S.C. §101 as being directed to non-statutory subject matter. The Examiner has rejected Claims 1 and 6 under 35 U.S.C. §102(e) as being anticipated by Park et al. (U.S. Patent 6,397,367). The Examiner has rejected Claims 2-5, 7 and 8 under 35 U.S.C. §103(a) as being unpatentable over Park et al. in view of Mousley (U.S. Patent 6,671,851).

Please cancel Claims 9-14 and 18-20, without prejudice.

With respect to the Restriction Requirement, reconsideration of the restriction of Groups I and III is respectfully requested. Independent Claim 15 in Group III includes a turbo encoder, a controller, and a quasi-complementary codes (QCTCs) generator. First, the Examiner asserts that the operation of the controller is not required nor mentioned in Claim 1, although it is not required to recite this element of hardware in a method claim. Further, the element "a different code rate that is to be transmitted after a sub-code with a predetermined code rate" recited in Claim 1 indicates sub-code, i.e. matrix, which was previously transmitted, which is directly related to "a matrix following a matrix used for a previous transmission among the rearranged matrixes of the selected QCTC" defined in Claim 15. Claims 2, 4 and 7 clearly define that the claimed sub-code is generated by matrixes representing puncturing and repetition. Although the Examiner asserts that Claim 1 does not define any steps related to the transmitting operation, the rearranging operation in Claims 1 and 3 is performed before the transmitting operation or can be performed when the transmitting operation is required. Therefore, the transmitting operation is

-8-

not a necessary recitation in Claim 1. That is, Claim 15 defines that the rearranging operation is previously performed on a plurality of sub-code sets, and Claims 1 and 3 define that the rearranging operation is performed on each sub-code set. Also, it is respectfully submitted that the Examiner is confusing the definitions of the sub-codes of Claim 1 and the matrix of Claim 15. Please note that the sub-codes of Claim 15 are expressed in a matrix point of view for rearranging. In conclusion, Groups I and III should be maintained in the present application.

Regarding the Examiner's refusal to consider the two (2) references, WO 01-54339 A1 and JP 2000 004196, submitted in connection with Information Disclosure Statements (IDS), filed November 13, 2002 and July 15, 2004, the Examiner states that no English language translation was found in the application files. It is respectfully submitted that the documentary evidence show that the documents were filed with a translation or in the English language; WO 01-54339 is an English language document, and JP 2000 004196 contained an English language translation as part of the document. On March 10, 2005 Applicants' representative, Michael J. Musella, contacted the Examiner to discuss this issue. The Examiner, upon review of his file, determined that the references were in fact submitted in English. Consideration of the IDS is respectfully requested.

The Examiner objected to the drawings as containing reference characters not contained in the description. Paragraphs on page 14, second full paragraph, page 30, second full paragraph, and page 39, last paragraph, continuing onto page 40 have been amended above to correct these errors. Withdrawal of the objections is respectfully requested.

The Examiner objected to the specification based on informalities. The Examiner alleges, "the Applicant *appears* to be using sub-code to have two different meanings." The Examiner is incorrect in his general position, as well as in his mischaracterization of how the term sub-code is used on page 10, lines 7-18. "Sub-code" is used consistently throughout the specification and the claims; "sub-code set" is also used consistently throughout the specification and the claims. It is respectfully submitted that the specification and claims should be read as is, namely, read "sub-code" as a sub-code, and "sub-code set" as a sub-code set. It is to be noted here that it appears

that many of the Examiner's rejections of Claims 1-8 under §112, second paragraph, (except for those few outlined below) stem from a misunderstanding of the difference between a sub-code and a sub-code set. The Examiner asserts that sub-code has two different meanings through the specification, mentions that the sub-code is made by a set of codewords, and each sub-code has a generating matrix (See page 10, lines 7-18). Claim 1 defines "rearranging sub-code of a set with a same or different code rate that is to be transmitted". The sub-code set includes sub-codes having an identical code rate, and sub-codes belonging to different sub-code sets have different code rates. As the difference between a set and its elements is basic and is also clear in this instance, all of the rejections based on this erroneous basis should be withdrawn.

The Examiner rejected Claims 1-8 under 35 U.S.C. §112, first paragraph, as being non-enabling. The Examiner alleges that quasi-complementary turbo code (QCTC) is not adequately defined in the specification. It is respectfully submitted that QCTC is well known in the art, and further as from page 3 in the specification, the entire description defines and explains the generation of QCTCs. In addition the second paragraph on page 3 has been amended to read, "In this context, QCTCs have been proposed to increase performance in a soft combining-using system. For details of the QCTCs, see Korea Patent Application No. P2000-62151 filed by the present applicant, and filed in the U.S. Patent and Trademark Office on October 17, 2001 and assigned Serial No. 09/981,934." Withdrawal of the rejections is respectfully requested.

The Examiner rejected Claims 1-8 under 35 U.S.C. §112, second paragraph, as being indefinite and/or incomplete. The majority of the rejections are addressed above with respect to the concept of a set and its elements. The Examiner states that Claim 5 is unclear. Claim 5 has been amended to read "each sub-code of the sub-code set being a matrix format with elements representing repetition and puncturing positions". The Examiner states that Claim 6 is unclear, in that he does not understand what "plurality of given code rates" modifies. Claim 6 has been amended to read "said sub-codes sets corresponding to a plurality of given code rates". The Examiner states that Claims 4 and 8 are unclear. Claims 4 and 8 have been amended to read "wherein the QCTC characteristic is that elements of the matrix represent have a uniform distribution of repetition and puncturing". The Examiner states that Claim 2 is incomplete. Claim 2 has been amended to read

"wherein the sub-code is <u>in</u> a matrix <u>format</u> with elements representing puncturing and repetition <u>positions</u>". Any and all of the remaining rejections are unclear and vague, and it is respectfully requested that the Examiner present specific rejections, if necessary, such that a proper reply can be submitted; general statements as to alleged conditions of claims are difficult to address. Withdrawal of the rejections is respectfully requested.

The Examiner rejected Claims 1-5 under 35 U.S.C. §101 as being directed to non-statutory subject matter. As there is neither any requirement under 35 U.S.C. §101, nor under any regulation promulgated there under, that a claim recite any hardware to carry out a limitation, nor is there any requirement under 35 U.S.C. §101, nor under any regulation promulgated there under, that a claim limitation not "be carried out by hand or in a computer program", it is respectfully submitted that no statutory-based rejection has been raised, and therefore no reply can be asserted. Withdrawal of the rejections is respectfully requested.

The Examiner has rejected Claims 1 and 6 under 35 U.S.C. §102(e) as being anticipated by Park et al. Regarding Claim 1, The Examiner states that Park et al. discloses a rate matcher that generates a first sub-code with a given rate. Park relates to a method for inserting known bits in an input data bit stream at predetermined positions; Park does not disclose that the sub-code set includes sub-codes having an identical code rate, and sub-codes belonging to different sub-code sets have different code rates. As this is clearly not the step of "generating sub-code sets" (i.e. generating sets containing sub-codes), the rejection must be withdrawn. Additionally, the Examiner states that the multiplexer of Park et al. is a device for rearranging sub-code codewords. As a multiplexer, by definition, does not rearrange its input as an output, but merely selects an input, the rejection must be withdrawn. Park discloses that a MUX (1305) multiplexes a rate matched user data symbol and a control data symbol; however, this is completely different from the rearranging operation of the present invention. And further, since the multiplexer does not perform any operation on a set of sub-codes, the rejection must be withdrawn. Still further, the Examiner has not properly cited any reference to reject that element of Claim 1 that recites, "that is to be transmitted after a sub-code with a predetermined code rate". And finally, no part of Park et al. teaches or discloses quasi-complementary turbo codes. Therefore the rejection must be

-11-

withdrawn.

Regarding Claim 6, the Examiner states that the multiplexer of Park et al. is a device for rearranging sub-code codewords. As stated above, as a multiplexer, by definition, does not rearrange its input, but merely selects an input, the rejection must be withdrawn. And further, the multiplexer of Park et al. does not perform any operation on a set of sub-codes. Still further, since the Examiner has not properly cited any reference to reject that element of Claim 6 that recites, "said sub-codes corresponding to a plurality of given code rates", nor the element that recites, "storing the rearranged sub-codes", therefore the rejection must be withdrawn. Additionally, the Examiner states that the transmitter of Park et al. discloses the transmitting step of Claim 6. Although the transmitter of Park et al. may perform a transmitting function, it certainly does not perform the step of "transmitting symbols *using a sub-code in the sub-code set of the selected QCTC*" as recited in Claim 6. And finally, no part of Park et al. teaches or discloses quasi-complementary turbo codes.

The Examiner alleges that he has rejected Claims 2-5, 7 and 8 under 35 U.S.C. §103(a) as being unpatentable over Park et al. in view of Mousley, but as the Examiner does not present any rejections of Claims 3, 4, 5, 7 or 8 in the Office Action, a proper reply is not possible. These claims are believed to be in condition for allowance.

Independent Claims 1, 5, 6 and 15 are believed to be in condition for allowance. Without conceding the patentability per se of dependent Claims 2-4, 7, 8, 16 and 17, these are likewise believed to be allowable by virtue of their dependence on their respective amended independent claims. Accordingly, reconsideration and withdrawal of the rejections of dependent Claims 2-4, 7, 8, 16 and 17 is respectfully requested.

Accordingly, all of the claims pending in the Application, namely, Claims 1-8 and 15-17, are believed to be in condition for allowance. Should the Examiner believe that a telephone conference or personal interview would facilitate resolution of any remaining matters, the Examiner may contact Applicant's attorney at the number given below.

Respectfully submitted,

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